

# Helicopter Rappel Spotter Training

## Student Workbook



Introduction:

Objectives:

During this unit the instructor will:

1. Introduce the instructor and students.
2. Discuss the training agenda.
3. Program Introduction
4. Program Objectives
5. Explain the evaluation process.
6. Review the Helicopter Rappel Spotter.

I. Introductions

II. Administrative Information

A. Congratulations Welcome to the Program

B. Training Agenda

C. Course Materials

Interagency Helicopter Rappel Guide (IHRG)

III. Program Introduction

The intent of this program is to provide spotter trainees with the necessary tools and techniques to be a successful Helicopter Rappel Spotter. This will be accomplished through the application of known leadership techniques and standardized training. The material presented in this course is designed to be interactive and generate class discussion. Your participation is not only requested but required. The training also utilizes scenario based exercises that are designed to give you a feeling what a Helicopter Rappel Spotter might do on any given day.

IV. Program Objectives.

The objectives of this training are to provide quality Helicopter Rappel Spotter to the Pacific Northwest Region and to the Rappel Helicopter Community. At the completion of the training successful trainees will be able to:

Demonstrate effective leadership, risk management, and communication skills required by Helicopter Rappel Spotters

Size up an incident, and develop a plan of action.

Deliver rappellers and cargo without procedural errors.

Demonstrate the ability to develop a plan of action and make adjustments to the plan as necessary.

V. Trainee Evaluations

A. Demonstrated Competency

The training provided through this program is performance based. Each section has a check list of demonstrated competencies, a failing grade (F) on any of the element results in the candidate being removed from the program. There will be no re-evaluations. Trainers are the primary evaluators; additional guidance will be given by the check spotters.

## VI. Helicopter Rappel Spotter

### A Duties

### B. Responsibilities

### C. Characteristics

Good Spotter

Bad Spotter

## Unit 1 Fundamental Skills

### Objectives:

1. Discuss effective leadership skills.
2. Discuss command presence and leaders intent.
3. Discuss communication responsibilities.
4. Situational Awareness
5. Decision making cycle.

## Unit 1 Fundamental Skills

### I. Leadership

#### A. Foundations of Leadership

1. Duty
2. Respect
3. Integrity

#### B Command Presence

1. Competent
2. Composed
3. Decisive
4. Self Confident
5. Goal Oriented.

#### C The Leadership Environment

1. The Team
2. The Leader
3. The Task

#### D Leadership Styles

1. Directing
2. Delegating
3. Participating

#### E. Leaders Intent

1. Task
2. Purpose
3. End State

## II. Communications

### A. The Basic five Communication Responsibilities. (Pre Mission)

1. Brief others as needed
2. Debrief your actions\*
3. Communicate hazards to others
4. Acknowledge messages
5. Ask if you don't know

### B. Communication Responsibilities as a HERS (Mission)

1. To Communication Centers
2. Fire Personnel
3. To Rappellers

### C. Communication Responsibilities of a HERS to Pilots (Mission)

1. Briefings/Debriefings
2. Clear Concise
3. In the Form of Challenge and Response.
4. Deliberate
5. Feedback

### D Post Mission.

1. Debrief your actions
2. Feedback
3. Follow Up

### III. Situational Awareness

- A. Perceptions
- B. Information Gathering
- C. Span of Control
- D. First Impressions

### IV. Decision Making

#### A. Situational Awareness

##### 1. Levels of Situational Awareness

- a. Perception of elements in current situation
- b. Comprehension of current situation
- c. Projection of future status.

##### 2. How do we gather situational awareness

- a. Observation – a combination of what we hear and touch.
- b. Communication – all forms of communication can provide additional SA
- c. What other SA items do we need to gather?

#### B. Decision Making Cycle

- 1. Problem Recognition
- 2. Option Selection
- 3. Decision Point
- 4. Action Change.



## Unit 2 Site Selection

### Objectives

1. Identify common element to all fire missions.
2. Discuss the elements that make a good rappel site.
3. Discuss the elements that make a rappel site bad.
4. Discuss the trade offs associated with each.
5. Additional items to consider when selecting rappel site.
6. List the pros and cons of different rappel sites.

## I. Common elements that need to be evaluated on all missions.

### A. Fire Behavior

This needs to be evaluated first and foremost as it related to firefighter safety. You need to make decisions not only on current fire behavior but on expected. Fire behavior will dictate everything from site selection, to the initial action you take on the fire. This is where you lean on your experience from being a firefighter on the ground and applying them to being a spotter. If you really think about it this portion of the job has nothing to do with being a helicopter rappel spotter, but being a solid firefighter.

### B. Safety Zones and Escape Routes

These are extremely difficult to judge from the air especially when it comes to the density of the vegetation on the ground and what type of fuels and terrain lie between the fire and the suggested safety zone. When you are uncertain as to the condition of the possible safety zone then it is not a safety zone, the IC on board will need this information so they can adjust tactics accordingly.

### C Environmental Influences that will affect helicopter operations.

#### 1. Wind

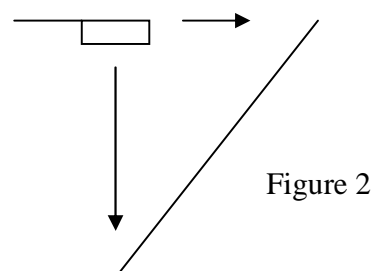
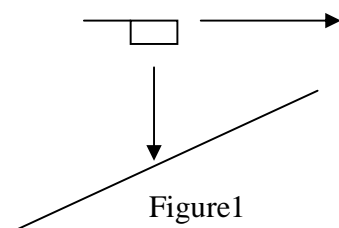
Don't think of it terms of speed and direction like a firefighter, but as a helicopter rappel spotter. Is it gusting, sustained, erratic, and most importantly how is it going to impact or affect the helicopter. Wind can lead to obvious things like drift, but how it is affecting the power, is the pilot having to continuously make adjustments because of fluctuating power.

#### 2. Topography

Are you on a ridge top or are you in a drainage how is the affecting other environmental influences such as the wind and or shadows.

#### 3. Slope

Again slope can be the driving factor in fire behavior, but slope as it pertains to rappel operations has different aspects both for the rappeller and helicopter rappel spotters. As rappellers you know how difficult it is to land on extremely steep ground and keep your balance. How do you think steep slope affect rappel and cargo operations?



#### 4. Vegetation

What is your dominate fuel type is it tall timber?, second growth (re-prod),? brush or a grass model? Depending on the fuel type and how continuous may dictate how many available rappel sites there are, thus affecting your site selection.

Once you have made the determination in conjunction with the Incident Commander that the fire behavior is suitable for action, and your environment influences allow you to take action on the fire you must now start to determine the appropriate action.

The information in the next section is capture in the Interagency Rappel Guide. Chapter 5 Rappel Operations, Section 5.4 In-Flight and Incident Approach Duties.

#### D. Offsite Landing or Rappel

1. The following criteria should be used as a guide by the pilot and spotter when evaluating whether to rappel or land:
  - a. Is a good landing site available within reasonable distance of where you need to go? If so land and walk.
  - b. Does the mission dictate getting someone to a site quickly as possible? If not, land at the closest suitable landing site and walk
  - c. Is the risk of traversing the terrain greater than the risk associated with rappelling? If not, land and walk.
2. If landing is not practical, the spotter and pilot will select a suitable rappel site. Before rappel operations begin:
  - a. The pilot shall perform an OGE power check prior to entering rappel hover at an altitude comparable to the site or greater. A positive rate of climb must be established without exceeding aircraft limitations.
  - b. Flight following and nearby ground personnel (to include IC if applicable) and/or aircraft notified of the beginning of the rappel operation
  - c. Radio may be turned down but must be left on. Isolate other frequencies, FM2, AM1, AM2, etc.
  - d. Hot mike activated.

#### II. What makes a good rappel site?

- A. Distance to fire.

Obviously the closer to the fire the better it is for the rappellers. It allows them to take action on the fire sooner, and is a benefit logistically. Also depending on the aircraft you may have to move to a different spot because the rotor wash may be impacting the fire.

#### B. Rotor Clearance

It should not be a secret to any of you what we are talking about here is the size of the opening you are going to be hovering over. The bigger the spot the less likely the rappellers are going to encounter situations on the rope from drifting into the tree, or other obstacles. Is the site big enough to allow you to place genies on the ground during multiple rappeller operations?

#### C. Obstacle Free

Is your rappel site free of snags, barbed wire fences, etc. etc.

#### D. Good Terrain

This relates to what the rappellers will actually be landing in. How steep is the ground, is it so steep that they won't be able to get good footing, or will they have to use an additional 50-75ft or rope. Is the ground real rocky, are the rocks protruding from the ground, will this impact the rappellers. Is the site a log jam with a bunch of criss-crossing logs. Does the vegetation cover the site and not give you a clear picture of what is on the ground.

### III. What makes a bad rappel site?

#### A. Snags

Snags need to be evaluated before rappel operations are conducted, how sound are the snags, do they look like they have cracks or damage. Is the rotor wash from the helicopter making them move excessively, will the snag reach the rappel spot if it was to fall during rappel operations? In what condition will the snag be once the aircraft leaves, have you weakened it to a point, that it is safety hazards know for your firefighters on the ground? Assume that snags have defects, every time, re-evaluate your spot.

#### B. Wind

Is the wind the wrong direction for the rappel site? Pilots like to set-up over rappel sites in a specific way depending on what the rappel site gives them to work with. They like to place associated hazards out there window, or in a place they can keep an eye on them. Depending on the situation a pilot might want to face downhill or down drainage to give them an escape route with the aircraft. If the wind is not conducive for operations in that location you must re-evaluate your spot.

### C. Visibility

Is the pilot staring directly into the sun? Is your rappel spot influenced by the shadows making it difficult for the pilot to find and keep references? Are there other factors influencing your visibility?

### IV. Trade off's

A perfect rappel spot is few and far between, your mission as a helicopter rappel spotter is to utilize all of your skills and abilities and make the most appropriate decision available. This comes back to the risk management and decision cycle that we talked about earlier. Effectively what you are doing is making trade-off's. Example: As a rappel spotter you might choose a place that is more open, over steeper ground, than a place with less slope but a tighter canopy and less rotor clearance.

### V. Additional items to consider in site selection.

#### A. Access and Egress

How are your rappellers going to get home, did you just place them somewhere that they can't walk out of. How does this affect them logistically?

#### B. See picture following page.



## VI. Pro's and Con's of site selection

The following pages contain aerial photos of different sites, some contain fire some don't. The objective of this exercise is to identify possible rappel sites. Looking at the aerial photo identify a possible rappel site, list three pros, and three cons of the site. If the photo contains fire you will be asked to give a size up of the incident. Mark your site with an X on the photo. Be ready to justify your answers.

Site 1: a and b

Take a moment and evaluate location 1a. Evaluate the site as if there is no fire present. Answer the following questions.

Pro's

- 1.
- 2.
- 3.

Cons

- 1.
- 2.
- 3.

What if any additional information as a spotter would you be trying to gather?

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Take a moment and evaluate location 1b. Evaluate the site as if a fire is located at the lightning bolt. Answer the following questions.



Has this changed your pros and con's and if so how?

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As a spotter what additional information would you be trying to gather?

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Location 1a.

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Location 1b.



Location 2.



Pro's

- 1.
- 2.
- 3.

Con's

- 1.
- 2.
- 3.

Fire size up.

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What additional information would you be trying to gather as a helicopter rappel spotter?

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Location 3.



Pro's:

- 1.
- 2.
- 3.

Cons

- 1.
- 2.
- 3.

As a rappel spotter what information can you gather from this view?

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What affects if any does the SEAT play into your decision making?

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What information could you be relaying or discussing with the Incident Commander?

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Is there any information you can gather from this photo that might help you in rappel operations?

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Location 4.



Pros:

- 1.
- 2.
- 3.

Cons:

- 1.
- 2.
- 3.

Location 5.



Pros:

- 1.
- 2.
- 3.

Cons:

- 1.
- 2.
- 3.

What additional items as a helicopter rappel spotter would you be considering?

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Unit 3  
Capabilities and Limitations  
From a Spotters Perspective

Objectives

1. Discuss the importance of learning the aircraft you're spotting out of.
2. Discuss the limiting factors of the rappel platforms in the region.
3. Discuss how knowing these factors can give you the best chance of success.

Preface:

The material covered in this unit is from a spotter perspective, it is not intended to be introduced as hard fast capabilities and limitation of specific aircraft. These limitations can be found in the aircraft flight manual. As a rappel spotter it is a good idea to become as familiar with the manual as possible.

The intent of this unit is to expose you to the different number you will hear from pilots whether the aircraft is temperature limited like the Bell 407, or torque limited like the Bell 205 and 212HP's, and to get you thinking what exactly does that number mean in addition to how it will affect your operation?

Any reference to power setting, torque setting, or temperatures reading are from past discussions with pilots and or experience as it has related to rappel operations. Again the true limitation of the aircraft is outlined in the limitation section of the aircraft specific flight manual.



## I. Learning the Aircraft

### A. Mechanical or Environmental Aircraft Limitation

All helicopters are limited in capability. These limitations are typically manifested through mechanical or environmental restrictions affecting the engine, the transmission, or directional control, and are evident to the pilot via indications in the cockpit. Typical limitations/restrictions encountered by aircraft conducting rappel operations are engine (temperature or RPM), transmission (torque), or controllability (available pedal). These limitations/restrictions are directly affected by environmental conditions such as Outside Air Temperature, Pressure Altitude, Wind Speed and Direction, etc. It is not uncommon to experience one limiting factor during a rappel sequence only to see a different factor during the next sequence.

As a helicopter rappel spotter it is imperative that you understand which factor(s) may limit rappel operations and, together with the pilot, establish the parameters within which operations can be conducted. The establishment of these parameters needs to take place when the aircraft first arrives on contract. I.E. torque will not exceed 45%, Temp will not exceed 700 degrees C, N-2 RPM will not exceed 98%, etc.

During the High Hover of the actual rappel sequence the pilot will determine the limiting factor(s) for current environmental conditions (torque, temperature, RPM, etc.) and inform the helicopter rappel spotter. Armed with the parameters previously determined, the spotter and the pilot will each be aware of the limitations associated with factor(s) affecting the current rappel sequence. With this information and a basic understanding of aircraft operating limits known to affect rappel operations, the spotter then become an integral part of the system of checks and balances.

### B. Pilot Abilities

Each individual pilot has differing skills, abilities, and levels of comfort. As a helicopter rappel spotter it is important to understand and recognize these attributes, as they will play a part in determining site selection and how you conduct operations.

## II. The limiting factors of the rappel aircraft in the region.

### Bell 205

The limiting factor of the Bell 205 is typically torque. During the rappel sequence when you ask for power, the pilot will respond power is good at \_\_\_\_ and give you a reading from the torque gauge. The gauge can be located in the cockpit, and/or on the panel inside the bubble window. The gauge ranges from 0-60 percent, with the breaks between the green, yellow, and red being; green 0-47.5%, yellow 47.5 to 55%, and red being 55-62% percent torque. The importance in knowing the numbers is that you and the pilot are on the same page.

## Bell 212HP

The limiting factor typically with the Bell 212HP is also torque. The communication between you and the pilot will be the same. You ask for power the pilot will respond with, powers good at \_\_\_\_% torque. The breaks on the torque gauge are 0-95% is green, yellow is 95-99%, and red being 100%. Again this is typically, at lower elevation and higher temperature you can run into combining gear box temperature limitations.

## Bell 407

The Bell 407 is different; typically its limiting factor is going to be temperature. The pilot will respond to you after a power check with powers good at \_\_\_\_\_. Temperature break downs for the Bell 407 is 0-727 degrees is in the green, 727-779 is in the yellow, and 779 and above is exceeding the operating limits.

Again the limits expressed in this section are for information purposes, these are the true torque or temperature limitation on the aircraft, but remember this information typically covers you. As you have heard, you can have situation where torque which is typically your limiting factor is good, but you are temping out. The take home message here is take the time to talk with the pilot at get to know the aircraft as best you can, and this exceeds just rappel operations. Ask about all aspects of the aircraft both mechanical but operational.

## III. Increasing your chance of success.

### A. Know yourself

Everybody is different, and with this comes different comfort levels with spotting. As trainees you need to be realistic in what your skills and abilities are and work inside those parameters. Don't be afraid to challenge yourself, but don't let your personality force yourself into a bad situation.

### B. Set Limits

These are both operational and personnel. Pick a definitive operational limit out of the aircraft you are working with and stick to it, and don't waffle. If you pick 44% out of the Bell 205 stick to it. As you gain experience and confidence you can re-evaluate your operational limits. Everyone also has personnel limits on what they can truly handle, be realistic with yourself.

### C. Do your homework

Every single spotter in the region has had a least one operational spot that has gone completely different than what was expected. As you can imagine these lessons learned have stuck with people and there is a lot of information to be learned simply by asking. So ask questions, not only of spotter but of pilots.

## Unit 4

### Communications

#### Objectives

1. Introduce Pre and Post Mission Briefings
2. Introduce Challenge Standard Challenge and Response
3. Introduce Emergency Challenge and Response

## Unit 4

### Communications

#### I. Pre and Post Flight Briefings

Pre and post mission briefings between the pilot, rappellers and spotter are essential. Items to be identified in the briefing include:

1. What is the mission
2. Where is the mission
3. Potential hazards
4. Preflight and in flight checks
5. Trigger points for aborting the mission
6. Emergency procedures

#### II.. Standard Challenge and Response

Challenge and Response is a required communication procedure between the spotter and rappeller. Throughout the rappel process “go” or “no go” decisions must be relayed before proceeding to the next step. Generally C/R is a simple response needed from the pilot before the spotter can complete a step in the rappel sequence i.e. spotter states “main and tail are clear move right 30 feet” the pilot replies “main and tail clear, right 30”. During the rappel sequence there are critical times when the spotter needs specific information from the pilot. An example of this would be prior to throwing ropes and prior to sending to rappellers. The spotter and pilot must know that the power is setting is within limits. An example of this is the spotter says “ready to send rappellers, how’s the power” and pilot would reply “power good 45%”. Then spotter states “45%, rappellers away”.

It is essential that the spotter and pilot develop a common ground for communications. All communications must be clear, concise and understood. Some terminology (i.e. “opening doors”) can be dependent on the make and model of aircraft. However, the following general standardized terminology is to be used during normal rappel operations

##### A. Directional.

1. “Left”
2. “Right”
3. “Move forward”
4. “Move back”
5. “Up” and “Down”

##### B. Procedural

1. “How’s the power”
2. “Dropping rope bags”
3. “Ropes on the ground”

4. "Rappellers to the skids"
5. "How's the power"
6. "Sending rappellers"
7. Rappellers position(s) in relationship to the descent, i.e. "Half way down"
8. "Rappellers on the ground"
9. "Rappellers clear"
10. "Dropping rope (left side/right side)"
11. "Ropes are clear"
12. "Clear to depart"

### C. Medium Helicopter Rappel Operations Pilot/Spotter Challenge and Response

See Appendix A

## III. Emergency Challenge and Response

The emergency challenge and response procedures are broken up into two sections emergency and precautionary. Depending on where you are at in the rappel sequence dictates which action as a spotter you will take. For this reason it is imperative that you understand how important effective communication between you and the pilot is.

### A. Emergency

1. Engine Failure
2. Tail Rotor Failure
3. Engine overspeed/driveshaft failure
4. Compressor Stall (Single engine)
5. Governor Failure Low Side (Twin Engine)
6. Governor Failure (Single Engine)

### B. Precautionary

1. Loss of Tail Rotor Effectiveness (LTE)
2. Transmission/Engine/Tail Rotor Gear Box Chip Light
3. Hydraulic Failure
4. Oil temp/Oil pressure light
5. Hydraulic temp or pressure light
6. Unknown Master Caution
7. Fire light (require pilot check of controls and for fire on board)
8. Stuck pedal
9. Fuel control or governor failure high side (Twin Engine)
10. Electrical failure
11. Fuel/air filter clog
12. Fuel pump failure
13. Decrease in rotor RPM

- 14. Compressor Stall (twin engine)
- | 15. Severe up or down drafts
- 16. Loss of Intercom

C. See Appendix B for complete Emergency Challenge and Response Procedures

## Unit 5

### Tower Work

#### Objectives:

1. Review equipment requirements and standards in the IHRG.
2. Instruct trainees on how to rig tower for cargo letdown.
3. Have trainee demonstrate proficiency in spotter/pilot communications.
4. Have trainee demonstrate proficiency in cargo letdown procedures.
5. Instruct trainee on how to rig tower for rappel operations
6. Have trainee demonstrate proficiency in spotter/pilot communications
7. Have trainee demonstrate proficiency in rappel spotter procedures.
8. Introduce Emergency Procedures Hand signals.



## Unit 5 Tower Work

### I. Equipment requirement and standards

#### A. Found in Chapter 3 of the IHRG.

As a helicopter rappel spotter you are responsible for making sure that only approved equipment is used for rappel and cargo operations. You also have the right to remove any rappel or cargo equipment you think is unsafe or doesn't meet inspection criteria.

#### B. Spotter Harness

Prior to beginning operations inspect harness for any abnormalities, make sure harness has a Raptor Knife and that the blades are clean and no debris is caught in the throat of the knife. Adjust the harness to fit your body.

Inspect the spotter tether attachment, again for any abnormalities, inspect the ejector snap is securely attached to the v-ring and that the extender section of the harness is secure in the sleeve, and make sure the dot snap is secure.

### II. Rig tower for cargo let down operations

Refer to Appendix C Bell 205/212/214B/412 Model Specific Cargo Deployment Procedures.

### III. Demonstrate Cargo Letdown Procedures and Communication with Pilot.

### IV. Rig tower for Rappeller Operations.

Refer to Appendix C Bell 205/212/214B/412 Rappel Procedures.

### V. Demonstrate Helicopter Rappel Spotter Procedures and Communication with Pilot

### VI. Rappel Emergency Procedures and Hand Signals

#### A. Rappel Emergency Procedures

Emergency Procedures are defined as established methods prescribed to respond to a situation, serious in nature, developing suddenly or unexpectedly, and demanding immediate action.

#### B. Rappeller Procedures and Signals

1. If during a rappel the rappeller encounters a problem that will hinder their progress to the ground, the rappeller will attempt to clear the problem. The rappeller may initiate a Lock-Off to facilitate using both hands to correct the problem. If a Lock-off has been initiated, and the rappeller still cannot resolve the problem, the rappeller will return their attention to the spotter and give the Spread-Eagle Signal. If the spotter gives the signal (**horizontal arm wave**), the rappeller will initiate an Emergency Tie-Off (ETO) and cut the rope below. If no ETO signal is given, the rappeller will be lowered to the ground.

2. Emergency Tie-Off (ETO) is a procedure completed after locking-off, to permanently secure the rappeller's position on the rope. Some situations when a tie-off may be required are:

- a. The rope becomes entangled, preventing the rappeller from descending or creates a hazard to the helicopter.
- b. The rappeller cannot descend because of pitch (sap) on the rope.
- c. A knot on the rope has become lodged in the descent device.
- d. The rappeller has a descent device malfunction.

When a problem occurs and the helicopter has insufficient clearance from obstacles to lower rappeller to ground or; there is a problem with rappel site/landing area; the spotter will signal the rappeller to begin the Emergency Tie-Off procedure.

3. The Tie-Off procedure is as follows:

- a. Bring running end of rappel rope through between the harness webbing and rappeller's body from right to left where the descent device is attached. Pull up three to four feet of slack to form a running loop.
- b. Bring loop up and over descent device and form a half-hitch around the fixed-end to helicopter) of rope. Pull half-hitch tight.
- c. Form another half-hitch on top of the first one. Pull tight. At least a two foot looped tail should remain.
- d. Cut the running end of rope approximately four to six feet below the descent device. After the rope has been cut, the rappeller gives the spotter the 'Lift-Out' Signal. This indicates to the spotter that the rope has been cut and that the helicopter should climb until the rappeller is clear of obstacles. After all obstacles have been cleared, the rappeller will indicate this with the 'Clear of Obstacles' Signal. Then, the helicopter transports rappeller to a safe landing site. Upon arriving at a safe landing site, the rappeller is lowered to the ground.

Once on the ground, circumstances will dictate how the rappeller will release from the rope. The rappeller should attempt to untie the rope and then disconnect the genie. However, cutting the rope may be the only safe option. In this case the rappeller shall wait for slack in the rope preventing possible snap back toward helicopter rotors.

## Unit 6

### Helicopter Mockups

#### Objectives:

1. Instruct trainees how to rig helicopter for cargo letdown.
2. Instruct trainees how to rig helicopter for rappel operations.
3. Have trainees demonstrate proficiency in cargo let down operations.
4. Have trainees demonstrate proficiency in rappel operations.

## Unit 6

### Helicopter Mock-ups

#### I. Cargo Operation

##### A. Secure cargo in cabin (appropriate to mission)

##### B. Check Equipment

1. Carabineers
2. Let-down lines (appropriate #)
3. Figure Eights
4. PPE
5. Spotter Harness (attached, adjusted w/ raptor knife)

##### C. Demonstrate cargo delivery and communications with pilot

#### II. Rappel Operations

##### A. Spotter

1. Harness adjusted fitted properly
2. Spotter tether inspected, adjustable tether device locked and secure
3. Spotter tether attached to spotter tether attach point carabineer secure

##### B. Aircraft Configuration

1. Anchor installed correctly and secure
2. Ropes attached to anchor, carabineers locked
3. Snub strap attached to rope between first and second swedges
4. Rope through bottom carabineer, carabineers secure abrasion protection
5. Genies rigged correctly appropriate number to rappellers
- 6 Check cargo configuration and equipment

##### C. Rappellers

1. Load Rappellers complete spotter check
2. Check rappellers in their seat, seat belts, gunner strap placement, check to see if rigging has been checked.
3. Close aircraft doors
4. Have rappeller's complete checks on spotter (you).

##### D. Demonstrate rappeller delivery and communications with pilot.

## Unit 7

### Live Helicopter Rappels

#### Objectives:

1. Demonstrate proficiency in conducting live helicopter rappel operations.

Under the supervision of an instructor, spotter trainee will inspect equipment, prepare cargo load, rig the aircraft and deploy rappellers without procedural error at low medium, and high heights. If successful, trainee under supervision will deploy rappellers and cargo in typical terrain.

Should at any point trainee make repetitive procedural error, the instructor will halt further live helicopter operations.